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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,270	04/19/2004	Shaowei Han	4590-212	9409

22429 7590 04/28/2006

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EXAMINER

ISSING, GREGORY C

ART UNIT	PAPER NUMBER
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3662

DATE MAILED: 04/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/826,270	Applicant(s) HAN ET AL.	
	Examiner Gregory C. Issing	Art Unit 3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The step and means for "enhancing ambiguity resolution of the first position estimate . . . and the other received signal" is insufficiently disclosed. Moreover, what is the distinction between "enhancing the ambiguity resolution of the first position estimate" and the "deriving a second position estimate." The determination of a first position using a first received signal and an other received signal" is insufficiently disclosed in the specification, specifically in relation to the case where two received signals are merely two GPS signals.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims are indefinite since they fail to clearly and distinctly set forth the subject matter, particularly with respect to the language "decorrelating a first and second measurement based on the received signal and the other received signal" since the first and second measurements are undefined. Additionally, the language "enhancing ambiguity resolution" is not definite since no previous ambiguity has been resolved and thus "enhancing" is unclear; what is it being enhanced over?

In claims 4-6, 8, 13-5, 17, 22-24 and 26, none of the function elements are defined in the claims in a clear and distinct manner.

Claim 15 is indefinite since it is not clear as to what statutory class it is. The preamble describes "a medium as claimed in claim 9", however, claim 9 is directed to a method.

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Claims 16-18 appear to be incorrectly dependent upon claim 9 particularly in light of the fact that claim 9 and 18 are substantially duplicates.

In claims 6, 15, and 24, the function "α" is not understood. There are no conditional statements, rather there merely exists a list of values, thus the determination of a coefficient by an undefined function fails to clearly and distinctly set forth the subject matter.

Claim Rejections - 35 USC § 101

5. Claims 1-27 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claims are directed to abstract ideas (judicial exception) comprising mathematical algorithms that do not provide a practical application; there is neither a physical transformation nor a useful, concrete and tangible result. Paragraph [0005] lists the practical applications of the subject matter thought to be patentable by the applicants, however, none are specifically provided in the claims nor do they flow inherently therefrom; thus the invention fails the test for being "useful". Furthermore, the claimed subject matter fails to produce a "tangible" result as the claimed subject matter merely "derives a position estimate". Likewise, the computer readable medium fails to produce a useful, concrete and tangible result when used in a computer system.

Drawings

6. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "enhancing ambiguity resolution of the first position estimate by decorrelating a first and second measurement based on the received signal and the other received signal" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet,

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and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-27 are rejected under 35 U.S.C. 102(b or e) as being anticipated by any one of Rapoport et al (102(e)) (2005/0190103), Dai et al ("A Multiple Outlier Detection Algorithm for Instantaneous Ambiguity Resolution for Carrier Phase-Based GNSS Positioning"), Teunissen ("A New Method for Fast Carrier Ambiguity Estimation") and Park et al ("Efficient Ambiguity Resolution Using Constraint Equation")..

Each of the above-cited references disclose the claimed method and apparatus for improving RTK, as best understood, including determining a first position estimate on the basis of a plurality of GNSS signals, whether it is reception of dual frequency signals L1/L2, a signal received from a satellite at two offset times, a signal received at first and second different receivers, etc, enhancing ambiguity

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resolution by solving for integer ambiguities, and the subsequent use of the integer ambiguities in the determination of a more accurate position.

Conclusion

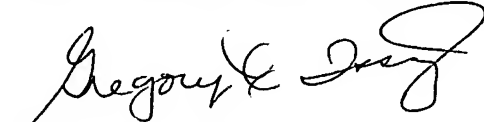
9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Directions Magazine "Thales Navigation Z-Max Gives Professional Surveyors Maximum Productivity with Unique Modular Design and Superior RTK Positioning", August 28, 2003, discloses the marketing of ADAPT-RTK Technology which appears to be the technology of the instant subject matter. The product sheet for "Z-Max Surveying System" that utilizes the ADAPT-RTK technology, which appears to be the technology of the instant subject matter, released 8/18/03. Talbot et al (5,748,145) disclose a real-time kinematic initialization (i.e., integer ambiguity resolution) system. Pratt et al (6,181,274) disclose a system and method for resolving ambiguities in dual frequency GPS/GLONASS receivers wherein LMS processing may be applied to more than one differencing scheme at a single epoch and looking for inconsistencies therein for validation. Aboulsalem et al teach an instant RTK positioning system and method that requires ambiguity resolution in light of the fact that it is real-time kinematic. The receiver is dual frequency, L1 and L2, designed to provide centimeter-accuracy positions in a variety of system configurations. The system and method achieves fast resolution of ambiguities and updates a stochastic model in real-time based on the changing conditions. A series of validation criteria in addition to the ratio test are used.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory C. Issing whose telephone number is (571)-272-6973. The examiner can normally be reached on Monday - Thursday 6:00 AM- 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on (571)-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Gregory C. Issing
Primary Examiner
Art Unit 3662

gci